DECISION DOCUMENT FOR THE APPROVAL OF OHIO'S SUBMISSION OF THE STATE'S INTEGRATED REPORT WITH RESPECT TO SECTION 303(d) OF THE CLEAN WATER ACT (CATEGORY 5 WATERS)

U.S. EPA has conducted a complete review of Ohio's 2008 Section 303(d) list and supporting documentation and information, and based upon this review U.S. EPA has determined that Ohio's list of assessment units (AU's) still requiring total maximum daily loads (TMDLs) meets the requirements of Section 303(d) of the Clean Water Act (CWA or Act), and U.S. EPA's implementing regulations. Therefore, U.S. EPA hereby approves Ohio's 2008 Section 303(d) list. Ohio's list of AUs still requiring TMDLs appears in Category 5 of the Ohio 2008 Integrated Water Quality Monitoring and Assessment Report (2008 Integrated Report), and U.S. EPA's approval extends only to the AUs in Category 5 of the Integrated Report. The statutory and regulatory requirements, and U.S. EPA's review of Ohio's compliance with each requirement, are described in detail below.

I. Statutory and Regulatory Background

Identification of Water Quality Limited Segments (WQLSs) for Inclusion on Section 303(d) List

Section 303(d)(1) of the Act directs states to identify those waters within its jurisdiction for which effluent limitations required by Section 301(b)(1)(A) and (B) are not stringent enough to implement any applicable water quality standards, and to establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters. The Section 303(d) listing requirement applies to waters impaired by point and/or nonpoint sources, pursuant to U.S. EPA's long-standing interpretation of Section 303(d).

U.S. EPA regulations provide that states do not need to list waters where the following controls are adequate to implement applicable standards: (1) technology-based effluent limitations required by the Act; (2) more stringent effluent limitations required by state or local authority; and (3) other pollution control requirement required by state, local, or federal authority, as found in 40 C.F.R. §130.7(b)(1).

Consideration of Existing and Readily Available Water Quality-Related Data and Information

In developing Section 303(d) lists, states are required to assemble and evaluate all existing and readily available water quality-related data and information, including, at a minimum, consideration of existing and readily available data and information about the following categories of water: (1) waters identified as partially meeting or not meeting designated uses, or

as threatened, in the state's most recent Section 305(b) report; (2) waters for which dilution calculations or predictive models indicate nonattainment of applicable standards; (3) waters for which quality problems have been reported by government agencies, members of the public, or academic institutions; and (4) waters identified as impaired or threatened in a nonpoint assessment submitted to U.S. EPA under Section 319 of the Act (40 C.F.R. §130.7(b)(5)). In addition to these minimum categories, states are required to consider any other data and information that is existing and readily available. U.S. EPA's 1991 Guidance for Water Quality-Based Decisions (1991 Guidance), describes categories of water quality-related data and information that may be existing and readily available. While states are required to evaluate all existing and readily available water quality-related data and information, states may decide to rely or not rely on particular data or information in determining whether to list particular waters.

In addition to requiring states to assemble and evaluate all existing and readily available water quality-related data and information, U.S. EPA regulations require states to include as part of their submissions to U.S. EPA documentation to support decisions to rely or not rely on particular data and information and decisions to list or not list waters. 40 C.F.R. §130.7(b)(6) states that such documentation needs to include, at a minimum, the following information: (1) a description of the methodology used to develop the list; (2) a description of the data and information used to identify waters; and (3) any other reasonable information required by the Region.

Priority Ranking

U.S. EPA regulations also codify and interpret the requirements in Section 303(d)(1)(A) of the Act that states establish a priority ranking for listed waters. 40 C.F.R. §130.7(b)(4) requires states to prioritize waters on their Section 303(d) lists for TMDL development, and also to identify those AUs targeted for TMDL development in the next two years. In prioritizing and targeting waters, states must, at a minimum take into account the severity of the pollution and the uses to be made of such waters. As long as these factors are taken into account, the Act provides that states establish priorities. States may consider other factors relevant to prioritizing waters for TMDL development, including immediate programmatic needs, vulnerability of particular waters as aquatic habitats, recreational, economic and aesthetic importance of particular waters, degree of public interest and support, and state or national policies and priorities found in 57 Fed. Reg. 334040, 33045 (July 24, 1992), and U.S. EPA's 1991 Guidance.

Identification of Waters and Consideration of Existing and Readily Available Water Quality-Related Data and Information

The Ohio 303(d) list is contained in Section L4 of the 2008 Integrated Report, and is in compliance with Section 303(d) of the Act and 40 C.F.R. §130.7. U.S. EPA has reviewed Ohio's description of the data and information it considered, its methodology for identifying waters, and considered any other relevant information including information the State submitted to U.S. EPA in response to requests for additional information. U.S. EPA concludes that the

State of Ohio properly assembled and evaluated all existing and readily available data and information, including data and information relating to the categories of waters specified in 40 C.F.R. § 130.7(b)(5).

U.S. EPA has also determined that the State properly listed waters with nonpoint sources causing or expected to cause impairment, consistent with Section 303(d) of the Act and U.S. EPA guidance. Section 303(d) lists are to include all water quality limited segments (WQLSs) still needing TMDLs, regardless of whether the source of the impairment is a point and/or nonpoint source. U.S. EPA's long-standing interpretation is that Section 303(d) applies to waters impacted by point and/or nonpoint sources. In *Pronsolino v. Marcus*, the Ninth Circuit Court of Appeals held that Section 303(d) of the CWA authorizes U.S. EPA to identify and establish total maximum daily loads for waters impaired by nonpoint sources.[1]

Section D3 of the 2008 Integrated Report discusses the sources of existing and readily available data. Ohio EPA's own data sets and external sources were used for the 2008 Integrated Report, including: 1) To determine impairments using the human health based water quality criteria, Ohio EPA used fish tissue contaminant data found in the Fish Tissue Contaminant Database; 2) For Recreational Use, Ohio EPA used its own data and bacteria data from NPDES permittees, health departments, and the Northeast Ohio Regional Sewer Districts (NEORSD); 3) For Aquatic Life Use, Ohio EPA used its own data and data from the Ohio Department of Natural Resources, U.S. Geological Survey, NEORSD, Midwest Biodiversity Institute (MBI), and Heidelberg College; and 4) Public Water Supply data are from SDWIS (PWS compliance database), Heidelberg College, or Syngenta Crop Protection, Inc. (Atrazine Monitoring Program). The data collectors either received intensive training and certification from Ohio EPA to become Qualified Data Collectors (QDC), or the entities have submitted data in the past.

The Ohio River data collection is through the Ohio River Sanitation Commission (ORSANCO). The Commission was established in 1948 and operates programs to improve water quality (through wastewater discharge standards, biological assessments, monitoring chemical and physical properties), coordinates emergency response for spills or accidental discharges, and promotes public participation in volunteer programs. Ohio defers to ORSANCO analysis and its list of impaired Ohio River segments, discussed later in this document.

In 2003, Ohio passed a credible data law (ORC 6111.50 to 6111.56), that establishes requirements for the use of external data. That law requires the Director of Ohio EPA to adopt rules that would, among other things, require that data be collected by a qualified data collector and be compliant with the specifications of "Level 3 credible data," in order to be used for listing waters under Section 303(d). Those rules, effective March 24, 2006, are located at Chapter 3745-4 of the Ohio Administrative Code (OAC). Within Section D5.1 of the 2008 Integrated Report is the memorandum dated August 31, 2007, sent by Ohio to solicit Level 3 data from all NPDES discharge permit holders, those who had formerly submitted data, and all Level 3 QDC.

[1] Pronsolino et al. v. Nastri et. al., 291 F. 3d 1123 (9th Cir, 2002); see also U.S. EPA's 1991 Guidance; and National Clarifying Guidance for 1998 Section 303(d) Lists, August 27, 1997.

II. Analysis of Ohio's Submission

Listing Methodology and Reporting

U.S. EPA issued guidance for integrating the development and submission of 2002 Section 305(b) water quality reports and Section 303(d) lists of impaired waters in U.S. EPA's 2002 Integrated Water Quality Monitoring and Assessment Report Guidance, November 19, 2001 (2001 Guidance). The 2001 Guidance was superceded by U.S. EPA's Guidance for 2004 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d) and 305(b) of the Clean Water Act, July 21, 2003 (2003 Guidance). The 2003 Guidance recommends that states develop an integrated report of the quality of their waters by placing all waters into one of five assessment categories. On August 12, 2005, the 2006 Integrated Report Guidance (2006 IRG) became available (USEPA 2005). Ohio followed the approach set out in the 2006 IRG. In a memorandum dated October 12, 2006, from the Office of Wetlands, Oceans, and Watersheds, all Regions were instructed to follow the 2006 IRG in preparing the 2008 IR. The waterbodies in Category 5 constitute the State's Section 303(d) list.

As part of its ongoing monitoring and assessment program, the State developed a five-year rotating basin plan that divides the State into 25 areas each comprised of a group of subbasins within major river basins. Ohio EPA estimates that under the current funding levels monitoring takes more than 10 years to complete throughout the State. After the State completes the monitoring in one of the assessment areas, it collects the data and assesses the biological, chemical, and physical condition of the AU. The State uses an 11-digit hydrologic unit code (HUC) as part of its assessment methodology and may be found in Section G2 of the 2008 Integrated Report. In Section I4 of the 2008 Integrated Report, Ohio EPA describes a significant change in future reporting and listing in the 2010 Integrated Report based on the conversion from 11-digit HUCs to the smaller 14-digit HUCs. The change would report watersheds on an approximate 25 square mile size rather than the current 130 square miles. The conversion would provide data on a finer scale and allow for better reporting of watershed impairments and improvements. For the 2008 Integrated Report:

- There are 331 principal watershed assessment units (WAUs) within the State represented by 11-digit HUCs (with a median size of 130 mi^2);
- There are recent data on 16 of the 23 defined large river assessment units (LRAUs) each with drainage of at least 500 mi^2;
- 3 AUs that incorporate the near shore of Lake Erie; and,
- 25 Watershed Assessment Units (WAUs) in the state on the mainstem of the Ohio River (out of a total of 43 AUs in the ORSANCO 2006 305(b) report).

Ohio EPA's water quality reporting and listing methodology focuses on watersheds by assessing and listing AUs, which include multiple segments. After an AU is defined the data are collected and analyzed to determine whether the AU is supporting, partially supporting, or not supporting

the designated uses within the AU. Each AU is then placed in one of the five assessment categories described in the 2001 Guidance.

Another critical subdivision for Ohio listing is based not only on spatial categorization of watersheds, Lake Erie, and the Ohio River, but also on designated uses. The listings are for impairment of aquatic life use, human health (fish contaminants), recreation, and public water supply. The assessment of the Public Drinking Water Supply Beneficial Use for the 2008 Integrated Report, described in Section H, is a substantive addition in assessing impairments in the 2008 Integrated Report. An assessment for each public water system was completed for nitrates and pesticide indicators (focused on atrazine) for this listing cycle. The assessments include a "watch list" of waters with elevated levels of contaminants that will be targeted for additional sampling.

Table 1 below is the summary of impairment listings for public drinking water supply and is a subset of the information provided in Table H-2 in Section H of the 2008 Integrated Report. Included are only those waters and facilities with impaired status.

Table 1. Public Drinking Water Supply Impairment

Assessment unit	Description	Cause of impairment	Locations
4100009-001	Maumee River Mainstem	nitrate	City of Defiance City of Napoleon Campbell Soup PWS Village of McClure City of Bowling Green
4100011-001	Sandusky River Mainstem	nitrate	City of Freemont
5080001-070	Great Miami River (dnstr Tawawa Creek to mouth)	pesticides	City of Piqua
5090201-100	White Oak Creek (North Fork/East Fork to mouth)	pesticides	Village of Mt. Orab

Another consideration for this listing cycle is the inclusion of exotic species as listed impairments. Ohio received comments that there needs to be more consideration of invasive species, and that the Integrated Report did not include those waters within their list of waters requiring a TMDL, did not identify exotic species as an impairment or threat, and did not develop TMDLs related to this cause of impairment. EPA notes that states have taken different approaches regarding identification of waters that may be impaired by aquatic nuisance species (ANS; also known as invasive or exotic species). The different approaches taken by the states may reflect the fact that EPA has not determined whether aquatic nuisance species are pollutants within the definition of CWA 502(b) and has not provided guidance to the states on how to address waters that may be impaired by ANS. In addition, some states may not have appropriate

methodologies for assessing ANS impairments. EPA intends to include clarification in the 2010 listing guidance on how monitoring and assessment methodologies should address the negative impacts of ANS on states' waters.

Ohio recognizes the impairments that the invasives have caused or may cause, and has listed the three Lake Erie assessment units as impaired including exotic species as a major cause of impairment. Ohio also recognizes that inland lakes, reservoirs and wetlands may contain one or more species of invasives, but has not yet established assessment procedures to determine the effect of exotics on the use attainment. In the interim, Ohio EPA, along with other agencies, is trying to limit the invasives through water treatments and regulation of ballast water discharges. Biological sampling is conducted extensively throughout the State to determine each AU's status for aquatic life use. Chemical and physical sampling is also conducted as part of the assessment process. Ohio has an extensive data base on aquatic life use. The State has been collecting data for aquatic life use for over 20 years.

The 303(d) list is located in Section L4 of the 2008 Integrated Report. The status and reporting category for each of the 331 WAUs are listed in Section M2, and the status and reporting category for the 23 LRAUs are listed in Section M3 of the 2008 Integrated Report. For the near shore of Lake Erie (i.e., within 100 meters of the shoreline), the Integrated Report includes three AUs (i.e., Western Basin Shoreline, Islands Shoreline, and Central Basin Shoreline), that are listed in Section M4 of the 2008 Integrated Report. The three Lake Erie AUs correspond to the adjacent HUCs along the shoreline.

Table B-3 below is taken from the 2008 Integrated Report and is a summary of progress toward the "80% by 2010" Aquatic Life Use (ALU) goal, with an overall increase in attainment over the years. Section A of the 2008 Integrated Report states that Ohio has reached 78.7% of the designated ALU goal of "80% attainment by 2010" for large rivers, a 54.7% average watershed score, and 65.2% of the principal streams and large rivers. Table B-2 is a list of principal streams and large rivers by major Ohio watersheds.

Table B-3. Progress towards the 80% by 2010 Aquatic Life Use goal over the last four Integrated Report assessment cycles[4].

Integrated Report Statistics	2002 (1991-2000)	2004 (1993-2002)	2006 (1995-2004)	2008 (1997-2006)
Watershed Assessment Units (WAUs): 331 Total				
WAUs Assessed (% of Total)	224 (68%)	225 (68%)	212 (64%)	218 (66%)
No. Sites Assessed	3272	3620	3785	4030
WAU Goal Status (Average Ohio WAU Score)				
% Full Attainment Score	**46.6**	**48.3**	**52.5**	**54.7**
Large River Assessment Units (LRAUs): 23 Rivers / 1287 Miles *(miles defined as those draining >500 mi² watersheds)*				
LRAUs Assessed (% of Total)	22 (96%)	21 (91%)	17 (74%)	16 (70%)
No. Sites Assessed	422	425	374	278
Miles Assessed (% of Total)	905 (70%)	918 (71%)	873 (68%)	850 (66%)
LRAU Goal Status (% Monitored Miles in Full Attainment)				
% Full Attainment	**62.5**	**64.0**	**76.8**	**78.7**
Principal Streams and Large Rivers: 254 Rivers and Streams / 5761 Miles *(miles defined as those draining >50 mi² watersheds)*				
No. Sites Assessed	1444	1445	1312	1223
Miles Assessed (% of Total)	3909 (68%)	3781 (66%)	3625 (63%)	3762 (65%)
Goal Status (% Monitored Miles in Full Attainment)				
% Full Attainment	**55.4**	**57.6**	**63.1**	**65.2**

Ohio River Listing

The AUs associated with the main stem of the Ohio River are assessed by the Ohio River Sanitation Commission (ORSANCO), which reports its findings in a Section 305(b) report. ORSANCO is an interstate agency charged with abating existing pollution in the Ohio River Basin and preventing future degradation of its waters. ORSANCO was established in 1948 through the signing of the Ohio River Valley Water Sanitation Compact by representatives of the eight member states. Through this Compact, ORSANCO has been given authority to develop the Section 305(b) report for the Ohio River. Ohio participates in the ORSANCO workgroup to promote consistency between 305(b) reporting and 303(d) listing. In the past, Ohio EPA has narratively incorporated ORSANCO's listing of impaired waters into its Integrated Report for those portions of the Ohio River located within the State of Ohio. Section D4 of the 2008 Integrated Report states that the ORSANCO has listed the impaired segments of the Ohio River in its Section 305(b) report, and that Ohio EPA defers to that list of impaired segments found in the *2008 Biennial Assessment of Ohio River Water Quality Conditions* (ORSANCO 2008, expected summer of 2008). Ohio incorporates these by reference into its 303(d) list.

Lake Erie Listings

The 2008 Integrated Report assesses the aquatic life use status of the Lake Erie shoreline in three assessment units: western basin nearshore, central basin nearshore, and islands. These three AUs are described as the "nearshore" as being within 100 meters of the shoreline. The term "lacustuary" specifies the zone where Lake Erie water levels have intruded into tributary river channels. The aquatic life use status of a lacustuary is included in the assessment of the tributary river.

Ohio used narrative standards to determine aquatic life use impairments for the nearshore and lacustuary zones. In 1997, Ohio completed *Development of Biological Indices Using Macroinvertebrates in Ohio Nearshore Waters, Harbors, and Lacustuaries of Lake Erie in Order to Evaluate Water Quality*. In 1999, Ohio produced *Biological Monitoring and an Index of Biotic Integrity for Lake Erie's Nearshore Waters*. The data in these documents provide a foundation to establish numeric biocriteria for aquatic life in the Lake Erie AUs. Fish community data, which best represent current conditions along the Lake Erie nearshore zones, were evaluated against the numeric biocriteria for aquatic life use established in those studies. It has been determined that there is 13.8% non-attainment for aquatic life use in the Western Basin, and 22.2% in the Central Basin, 0.1% around the Islands (considered in attainment).

Table G-1 of the 2008 Integrated Report, on the following page, indicates that overall 10.2% of the sites assessed for the three Lake Erie AUs are in full attainment for aquatic life use. In the last reporting cycle, the number was 19.4%. This may be attributed to age of available data, with some older data dropped and no new data collected. The overall Category 5 listing of each

assessment unit as well as the high magnitude causes and sources remained unchanged. Overall there was a slight increase in attainment in WAUs and LRAUs.

Table G-1. Summary of aquatic life use assessment for Ohio's Watershed, Large River, and Lake Erie Assessment Units: 2002, 2004, 2006, and 2008.

	2002 (1991-2000)	2004 (1993-2002)	2006 (1995-2004)	2008 (1997-2006)
Watershed AUs (331)				
No. AUs Assessed (percent of total)	224 (68%)	225 (68%)	212 (64%)	218 (66%)
No. Sites Assessed	3272	3620	3785	4030
Average AU Scores				
Full Attainment	**46.6**	**48.3**	**52.5**	**54.7**
Partial Attainment	25.2	23.6	22.6	22.4
Non-Attainment	28.2	28.1	24.9	22.9
Large River AUs (23 rivers totaling 1287 Miles)				
No. AUs Assessed	22	21	17	16
No. Sites Assessed	422	425	374	278
No. Miles Assessed (percent of miles)	905 (70%)	918 (71%)	873 (68%)	850 (66%)
% Miles Full Attainment	**62.5**	**64.0**	**76.8**	**78.7**
% Miles Partial Attainment	23.0	21.4	15.1	13.9
% Miles Non-Attainment	14.5	14.6	8.1	7.4
Lake Erie AUs (3)				
No. AUs Assessed	3	3	3	3
No. Sites Assessed	92	111	93	49
% Sites Full Attainment	**12.0**	**18.0**	**19.4**	**10.2**
% Sites Partial Attainment	13.0	14.4	16.1	22.4
% Sites Non-Attainment	75.0	67.6	64.5	67.4

Attainment of recreational water quality standards for the three Lake Erie AUs was based upon examination of *E. coli* data provided by the Ohio Department of Health. Section F2 of the 2008 Integrated Report explains change in this listing cycle in calculations for listing. Formerly, data from the past five recreation seasons was used to track the number of days over the sampling period that five consecutive samples within a 30 day period exceeded the geometric mean of the *E. coli* criterion of 126cfu/ml. For this reporting cycle, a single sample maximum exceedance of 235cfu/ml *E. coli* criterion was also used as a listing criterion for beaches as required by the 2004 federal BEACH Act rule, in addition to the running geometric mean. The Western and Central Basin AUs (21 beaches) are in non-attainment, while the Lake Erie Islands AU (2 beaches) is in full attainment, shown in Table F-3 taken directly from the 2008 Integrated Report. Table F-4 on the following page, shows the Lake Erie AU trends for the last several listing cycles; the AUs attaining recreational use has increased very slightly and those impaired for recreational use has remained the same.

Table F-3. Bathing water geometric mean *E. coli* exceedance frequency at 23 Lake Erie public beaches from 2001-2005 (pooled by Lake Erie assessment unit to report attainment status).

	Western Basin	Central Basin	Lake Erie Islands
Number of beaches	8	10	2
Total recreation days	3893	4829	866
Total days in exceedance	536	1074	7
Exceedance percentage	13.8%	22.2%	0.1%
Average # of days *E. coli* criteria exceeded per beach per season [1]	13.4	21.5	0.7
Attainment status	Non attainment	Non attainment	Full attainment

Table F-4. Overall differences in the assessment of recreation use attainment, 2004 to 2008.

	2004 Report		2006 Report		2008 report	
	Number	Percentage	Number	Percentage	Number	Percentage
Total AUs	354	100	354	100	354	100
Assessed	166	47	154	43	166	47
Attaining Recreation Use	56	33	57	37	63	38
Impaired Recreation Use	110	67	97	63	103	63
Not Assessed	188	53	200	57	188	53

Table 2 below shows a change in status of AUs in the Lake Erie assessment that is a subset of the information found in Table F-5 of the 2008 Integrated Report.

Table 2. Assessment units listed as impaired for recreation use in 2006 and found to be in attainment in the 2008 report

Assessment Unit	Description
04100010 050	Portage River (downstream South/Middle Branches to downstream North Branch)
04110001 040	East Branch Black River (downstream Coon Creek to mouth)
04110001 050	Black River; Lake Erie tributaries East of Black River to West of Porter Creek)
05030103 001	Mahoning River Mainstem (downstream Eagle Creek to Pennsylvania border)
05060001 190	Big Darby Creek (headwaters to downstream Sugar Creek)
05060002 070	Salt Creek (headwaters to upstream Queer Creek)

Table 3 below is a change in status of AUs in the Lake Erie assessment that is a subset of the information found in Table F-6 of the 2008 Integrated Report.

Table 3. Assessment units listed as impaired for recreation use in 2006 and found to be impaired in the 2008 report

Assessment Unit	Location Description
04100010 030	Middle Branch Portage River (headwaters to downstream Rocky Ford Creek)
04110001 070	Rocky River; East Branch Rock R.; Lake Erie tributaries (west of Porter Cr. to west of Cuyahoga R.)
04110002 050	Cuyahoga River (downstream Brandywine Cr. to downstream Tinkers Cr.); excluding Cuyahoga R. mainstem
05080001 001	Great Miami River Mainstem (downstream Tawawa Creek to mouth)

The Lake Erie and Great Lakes efforts include restoring beneficial uses to these water by development and implementation of Remedial Action Plans (RAPs) for the Maumee, Black, Cuyahoga and Ashtabula Rivers which all flow into Lake Erie; and the Lakewide Management Plan (LaMP). These rivers have been designated Areas of Concern (AOCs) because they are some of the most degraded areas along the Lake Erie coast. Remediation includes improvement of 14 elements of Beneficial Use Impairments (BIUs). In particular, the Ashtabula area had sediments contaminated with PCBs, PAHs, heavy metals and other organochlorine compounds dredged, and additional projects are underway to restore and enhance habitat.

Water Quality Standards

Ohio water quality standards have two distinct elements: designated uses, and numerical or narrative criteria designed to protect and measure attainment of the uses (OAC 3745-1-07(A)). Ohio EPA assigns each water body a use designation, and a water body may have one or more use designations. Each water body in the State is assigned an aquatic life habitat use designation, and may also be assigned a water supply use designation and/or one recreational use designation (OAC 3745-1-07(A)(1)). Ohio has six tiers in its aquatic life use designation system (OAC 3745-1-07(B)(1)), and three categories for both the recreational and water supply use designations. In addition, the Ohio Administrative Code contains statewide chemical-specific criteria for the support of use designations (OAC 3745-1-07(A)(2)). The following table is taken from Section D2 of the 2008 Integrated Report, and shows the designated uses in Ohio's water quality standards and how these uses were evaluated for the 2008 Integrated Report.

Aquatic life use: Ohio's standards contain numeric biological criteria that describe the expected biological performance of Ohio's wadeable and boatable rivers and streams. Ohio EPA uses the numeric biological criteria to interpret the data generated when a biological assessment of a stream is conducted (OAC 3745-1-07(A)(6)). Through a use attainability analysis, a given stream reach may be assigned an appropriate aquatic life use. Biological sampling is conducted to establish attainment status. Although chemical and physical data are also collected as part of Ohio EPA's comprehensive watershed evaluations, the performance of the fish and macroinvertebrate communities against three indices is used to determine attainment status.

Section G states that each year Ohio EPA conducts biosurveys. Since the last Integrated Report, Ohio has conducted sampling in 50 WAUs and 8 LRAUs with an aggregate total of approximately 900 sampling sites collected in 2005 and 2006. The data collected during the biosurveys are evaluated and used to develop a biological and water quality report. This information forms the basis for the list of waters impaired for aquatic life use for purposes of Section 303(d) listings. As part of the assessment process, Ohio has a Stream Regionalization Project to select reference, or least impacted sites, in each of Ohio's five ecoregions. Based on the results of this effort ecoregion-specific biocriteria were developed. For a sampling site to be classified as being in full attainment it must meet the relevant criteria of all three indices, the Index of Biotic Integrity (IBI), the Modified Index of Well-being (MIWb), and the Invertebrate Community Index (ICI) (OEPA 1999). These biocriteria are codified in Ohio's water quality standards (OAC 3746-1-07, Table 7-16). The table below is from Section D2 of the 2008

From Section D2.

Beneficial Use Category	Key Attributes (why a water would be designated in the category)	Evaluation status in 2008 Integrated Report
Categories for the protection of aquatic life		
Coldwater Habitat	native cold water or cool water species; put-and-take trout stocking	Assessed on case by case basis
Seasonal Salmonid Habitat	supports lake run steelhead trout fisheries	No direct assessment, streams assessed as EWH or WWH
Exceptional Warmwater Habitat	unique and diverse assemblage of fish and invertebrates	66% of the Watershed Assessment Units and 70% of the large River Assessment Units fully assessed using direct comparisons of fish and macroinvertebrate community index scores to the biocriteria in Ohio's WQS; sources and causes of impairment were assessed using biological indicators and water chemistry data
Warmwater Habitat (WWH)	typical assemblages of fish and invertebrates	
Modified Warmwater Habitat	tolerant assemblages of fish and macro-invertebrates; irretrievable condition precludes WWH	
Limited Resource Waters	fish and macroinvertebrates severely limited by physical habitat or other irretrievable condition	Assessed on case by case basis
Categories for the protection of recreational activities		
Bathing Waters	Lake Erie (entire lake); for inland waters bathing beach with lifeguard/bath house	Lake Erie public beaches fully evaluated; no inland waters evaluated
Primary Contact Recreation	water depth allows full body immersion	47% of the assessment units assessed using percentile rankings of fecal coliform counts
Secondary Contact Recreation	water depth prevents full body immersion	Assessed as part AU using PCR criteria
Categories for the protection of water supplies		
Public Water Supply	waters within 500 yards of all public water supply surface water intakes, publically owned lakes, waters sued as emergency supplies	Sufficient data were available to assess 37% of the 94 assessment units with PDWS use assessed using chemical water quality data; only waters with active intakes were assessed
Agricultural Water Supply	water used, or potentially used, for livestock watering and/or irrigation	Not assessed
Industrial Water Supply	water used for industrial purposes	Not assessed

Integrated Report and cites the beneficial use category, key attributes, and 2008 IR evaluation status. An AU is determined to be in partial attainment if only one criterion is not achieved, while non-attainment results when all biological scores are less than the criteria or if very poor scores are attributed to either fish or macroinvertebrate communities.

Public water supply: Ohio's water quality standards state that Ohio may also designate a water body for water supply use (OAC 3745-1-07(A)(1)). Ohio has three water supply uses: public, agricultural, and industrial. A public water supply is a water that with conventional treatment will be suitable for human intake and meet federal regulations for drinking water (OAC 3745-1-07(B)(3)(a)).

Section H in the 2008 Integrated Report summarizes the Public Drinking Water Supply Methodology using 1) nitrate, and 2) pesticides as indicators. *Cryptosporidium* water quality criteria are being developed and will also be used as an indicator in the 2010 Integrated Report. Water quality data were compared to the numeric chemical water quality criteria for the protection of human health (OAC 3745-1-33 and 34). Criteria for pesticides were applied using annual averages of quarterly averages, except for nitrate concentrations (which will use a maximum value) because at elevated levels, nitrate can cause acute health effects. The waters were then determined to be in full support, impaired, not assessed, or put on a "watch list", i.e., targeted for additional monitoring and assessment. Table H-1 below, from the 2008 Integrated Report, summarizes Public Drinking Water Supply impairment determination. The impaired locations based on these criteria are found previously in this document in Table 1.

Table H-1. Public drinking water supply impairment determination.
Applies to in-stream ambient and treated water quality data for the most recent five year period.

Indicator	**Impaired Conditions**
Nitrate	☐ Two or more excursions[1] above the WQ criteria within the 5 year period
Pesticides	☐ Annual average exceeds WQ criteria
Other Contaminants	☐ Annual average exceeds WQ criteria
Cryptosporidium[2]	☐ Annual average exceeds WQ criterion (1.0 oocysts/L)
Indicator	**Full Attainment Conditions**
Nitrate	☐ No more than one excursion[1] above the WQ criteria within the 5 year period
Pesticides	☐ Annual average does not exceed the WQ criteria
Other Contaminants	☐ Annual average does not exceed the WQ criteria
Cryptosporidium	☐ Annual average does not exceed the WQ criterion
Indicator	**"Watch List" Conditions** *Source waters targeted for additional monitoring and assessment*
Nitrate	☐ Maximum instantaneous value > 8 mg/L (80% of WQ criterion)
Pesticides	☐ Running quarterly average ≥ WQ criteria ☐ Maximum instantaneous value ≥ 4x WQ criteria
Other Contaminants	☐ Maximum instantaneous value ≥ WQ criteria
Cryptosporidium	☐ Annual average ≥ 0.075 oocysts/L

[1] Excursions must be at least 30 days apart in order to capture separate or extended source water quality events.
[2] Impaired conditions for *Cryptosporidium* are based on proposed water quality criteria which Ohio EPA intends to develop.
WQ Criteria - Water Quality Criteria defined in OAC Chapter 3745-1 established to protect in-stream water quality for the PWS beneficial use (Human health - Drinking Water)

Recreation: Ohio water quality standards state that Ohio may also designate a water body for recreational use (OAC 3745-1-07(A)(1)). Under the Ohio Administrative Code, recreational designations are in effect from May to mid-October (OAC 3745-1-07(B)(4)). The table below shows the standards for bathing and primary contact uses and is from Section F of the 2008 Integrated Report , and summarizes the linkage between the methodology and Ohio's water quality standards. The geometric mean E. coli content shall not exceed 126 cfu per 100 ml on not less than five samples within a thirty day period and shall not exceed 235 cfu per 100 ml in more than ten per cent of the samples taken during any thirty-day period. The geometric mean fecal coliform content shall not exceed 1,000 cfu per 100 ml on not less than five samples in the thirty day period and shall not exceed 2,000 cfu per 100 ml in more than ten per cent of the samples taken during any thirty-day period.

In Section F2, recreational use evaluation of rivers and streams are discussed. Data were from Ohio EPA and ambient monitoring collected by point source dischargers, from STORET and SWIMS databases. Approximately 30,550 fecal coliform bacteria records were used in the analysis. Statistical analysis performed were the geometric mean, median, 75th percentile, and 90th percentile of the fecal coliform data. The recreational use was determined by comparing the 75th percentile to the Ohio geometric mean fecal coliform criterion of 1,000 and 90th percentile was compared to the single sample maximum criterion of 2,000. Impairment was determined when either percentile exceeded the criterion. A minimum of three sampling locations within the AU and 15 measurements were required to make an assessment determination; the resultant impairments for recreational use, and comparisons of previous years, are shown in Tables F-3 and F-4 earlier in this document. Individual beach results are in Tables F-1 and F-2 in the 2008 Integrated Report and are incorporated by reference.

Bathing Waters		
Indicator	Criterion (Table 7-13, OAC 3745-1-07)	Assessment Method
E. coli	geometric mean E. coli content (either MPN or MF), based on not less than five samples within a thirty-day period, shall not exceed 126 per 100 ml and E. coli content (either MPN or MF) shall not exceed 235 per 100 ml in more than ten per cent of the samples taken during any thirty-day period	Lake Erie beach data was extensive enough to allow direct comparisons of geometric mean to the water quality criteria of 126; running geometric means calculated to arrive at the number of days in recreational season above the criterion; threshold of 10 days above criterion considered impairment of bathing water use. Comparisons to the single sample maximum criteria incuded for informational purposes, as well as information for individual beaches
Primary Contact		
Indicator	Criterion (Table 7-13, OAC 3745-1-07)	Assessment Method
Fecal coliform	geometric mean fecal coliform content (either MPN or MF), based on not less than five samples within a thirty-day period, shall not exceed 1,000 per 100 ml and fecal coliform content (either MPN or MF) shall not exceed 2,000 per 100 ml in more than ten per cent of the samples taken during any thirty-day period	Statewide data on rivers and streams was not extensive enough to allow direct comparison of geometric mean to the water quality criterion of 1000; data pooled from all sources over period of record was used; thresholds used for impairment of primary contact use were 75th percentile compared to 1000 and 90th percentile compared to 2000.

Section C of the 2008 Integrated Report discusses that the State of Ohio received authorization to administer the Pretreatment Program on July 27, 1983. Ohio EPA has a goal to permit 100% of significant industrial users (SIUs) with control mechanisms to implement pretreatment standards and requirements. The permitting is designed to ensure all SIUs are issued permits. There is also the Indirect Discharge Permit (IDP) which handles SIUs without pretreatment that discharge to POTWs with approved pretreatment programs to prevent toxic discharges from the SIUs to the POTWs. The major POTWs in Ohio that are national leaders in pretreatment are Cincinnati's Metropolitan Sewer District and Cleveland's Northeast Ohio Regional Sewer District (NEORSD).

Also in Section C is discussion of HB 110, permitting of semi-public systems with sewage volumes up to 25,000 gallons per day. The program is a partnership with local health districts for inspection and enforcement services.

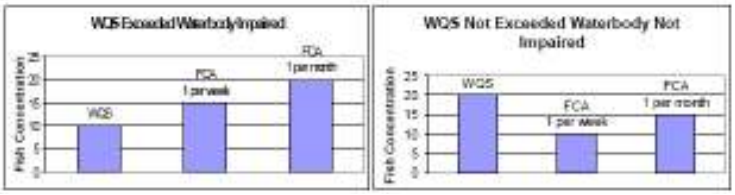
Wetlands: In 1998, Ohio established wetland water quality standards. These standards include provisions for wetland use designation, narrative criteria, numeric criteria for dischargers to wetlands, and antidegradation. All wetlands receive the "wetlands" use designation under OAC 3745-1-53. Narrative criteria have been codified which protect the functional and recreational aspects of designated wetlands. Ohio has a wetland antidegradation rule, OAC 3745-1-54 which categorized wetlands based on the wetlands relative functions and values, sensitivity to disturbance, rarity, and potential to be adequately compensated for by wetland mitigation. Recent reports include studies of: 1) use of wetland invertebrates as indicators; 2) Ohio wetland mitigation banks; 3) condition assessment of wetlands in the Cuyahoga River watershed; and, 4) condition and function of urban wetlands. There was also a grant to study selected mitigation wetlands around the state to compare with natural wetlands. Future studies will include associations between stream and wetland conditions and will be incorporated into future TMDL analysis of a watershed.

Inland lakes and reservoirs: Assessment of lakes began in 1989 with a Clean Water Act Section 314 grant that evaluated 52 lakes. Eighty-nine more were evaluated through 1995. In 1996, 447 public lakes were presented in a 305(b) report. As part of that report, lake evaluations used the Lake Condition Index (LCI), which characterizes overall lake health to assess beneficial use status. From 1996 to the present, Ohio EPA has monitored 53 lakes, but LCI scores have not been calculated. When the lakes were assessed, some of those lakes which were categorized as "threatened" in the 1990's do not qualify for listing, because the lakes were not evaluated with the current guidance and regulations used to characterize and assess for listing purposes. Both Level 2 and Level 3 data had been used in the past which is not now valid for listing; a lake may only use Level 3 data. Ohio did not have the available resources for the surveying of lakes for this listing cycle. However, a State Inland Lakes Team was formed since the last listing cycle. Further, there are several plans in place to commence with lake surveys in the 2008 field season. It is anticipated that only five lakes will be reported in the 2010 IR, and increasing in the 2012 IR. OEPA is also planning to have lake nutrient water quality criteria in place for the 2010 IR. During the 2007 field season OEPA participated in the U.S. EPA-sponsored National Lakes

Survey and had 19 lakes selected. New sampling techniques used may be helpful in the addition to the established sampling protocol.

Fish Contaminant Data: Fish Consumption Advisories (FCAs) are considered with regard to the human consumption of fish and listing, but waters are not listed on the basis of a FCA alone, but are compared to the risk assessment parameters on which the human health water quality standard criteria are based. Section E-2 and Figure E-1 below describes the rationale and evaluation method for putting waters on the 303(d) list because of FCAs, and further describes when a water may be on the list even if there is no FCA, and vice versa. The thresholds used for determining listing categories are based on water quality standards for human health and the fish contaminant data, not consumption advisories. New in this listing cycle are chlordane and mirex within the FCA analysis, in addition to the past analyses of mercury, PCBs, lead and hexachlorobenzene.

Figure E-1. Illustration of the relationship among the water quality standard (WQS) values, the values that trigger issuance of fish consumption advisories (FCAs) and the resulting decision regarding waterbody impairment associated with an FCA.



Basin / Parameter	Fish concentration on which the WQS is based [1]	Range of fish concentrations triggering an "eat no more than one meal per week" advisory	Range of fish concentrations triggering an "eat no more than one meal per month" advisory
Lake Erie / PCB	23 µg/kg	50 - 220 µg/kg	221 - 1,000 µg/kg
Ohio River / PCB	54 µg/kg	50 - 220 µg/kg	221 - 1,000 µg/kg
Lake Erie / mercury	350 µg/kg	110 - 220 µg/kg	221 - 1,000 µg/kg
Ohio River / mercury	1,000 µg/kg	110 - 220 µg/kg	221 - 1,000 µg/kg
Lake Erie / DDT	140 µg/kg	500 - 2,199 µg/kg	2,189 – 9,459 µg/kg
Ohio River / DDT	320 µg/kg	500 - 2,188 µg/kg	2,189 – 9,459 µg/kg
Lake Erie / Chlordane	130 µg/kg	500 - 2,199 µg/kg	2,189 – 9,459 µg/kg
Ohio River / Chlordane	310 µg/kg	500 - 2,188 µg/kg	2,189 – 9,459 µg/kg
Lake Erie / hexachlorobenzene	29 µg/kg	800-3,499 µg/kg	3,500-15,099 µg/kg
Ohio River / hexachlorobenzene	67 µg/kg	800 - 3,499 µg/kg	3,500 - 15,099 µg/kg
Lake Erie/ mirex	88 µg/kg	200 – 874 µg/kg	875 – 3,784 µg/kg
Ohio River/ mirex	203 µg/kg	200-874 µg/kg	875-3,794 µg/kg

Values	Advisory is less protective than the WQS criterion, WQS exceeded, waterbody impaired
Values	Advisory is more protective than WQS criterion, WQS not exceeded, no impairment from FCA
Values	Advisory may be more, or less, protective than WQS criterion

[1] See Section E4 for an explanation of how these concentrations were calculated.

Ohio's WQS regulations do not describe human consumption of sport fish as an explicit element of aquatic life protection. However, the WQS do include human health criteria that are applicable to all surface waters of the State. For Ohio, a FCA is determined based on the quantity of chemical in fish tissue, such as micrograms of chemical per kilogram of fish tissue (µg/kg). WQS, on the other hand, are expressed as the quantity of chemical in water, such as micrograms of chemical per liter of water (µg/l). The information used to calculate the human health non-drinking WQS criterion can be used to calculate a maximum safe fish concentration. That specific fish concentration value can then be directly compared to the FCA program values to determine whether the advisory is less or more protective than the WQS criterion.

Removal of Waters from the 303(d) List

The State has also demonstrated good cause for not including certain waters that were previously listed on Ohio's 2006 303(d) list. These previously listed waters are in Tables J-5 and J-6 of the Integrated Report. As provided in 40 C.F.R. § 130.7(b)(6)(iv), U.S. EPA requested that the State demonstrate good cause for not including these waters on its 2008 Section 303(d) list. There are 8 AUs removed from the 2006 Section 303(d) list. The State lists two reasons for the delisting: new data available showing the standards are now being met, and approval of TMDLs by U.S. EPA.

-Waters Meeting Water Quality Standards

The State's decision not to include one AU on its 2008 Section 303(d) list, shown on Table J-5, (Conneaut Creek; Lake Erie tributaries), is consistent with EPA regulations at 40 CFR 130.7(b)(6)(iv). These waters were identified on the State's 2006 Section 303(d) list. Under 40 CFR 130.7(b)(6)(iv), States are not required to list if they meet water quality standards based on more recent data.

-Waters Removed Based on TMDL Approval

The State's decision not to include 7 AUs, shown on Table J-6, on its 2008 Section 303(d) list is consistent with EPA regulations at 40 CFR130.7(b)(6)(iv). These waters were identified on the State's 2006 Section 303(d) list. Under 40 CFR 130.7(b)(6)(iv), States are not required to list if all impairments are addressed in the approved TMDL. (Chagrin River (2AUs), Sunday Creek, Sugar Creek (2AUs), South Fork Sugar Creek, Beaver Creek).

Waters Subject to Other Pollution Control Requirements Stringent Enough to Implement any Water Quality Standards, 40 CFR 130.7(b)(1)(iii)

Under 40 C.F.R. 130.7(b)(1), States are not required to list WQLSs still requiring TMDLs where effluent limitations required by the CWA, more stringent effluent limitations required by State or local authority, or other pollution control requirements required by state, local, or federal authority, are stringent enough to implement applicable water quality standards. The regulation does not specify the time frame in which these various requirements must implement applicable water quality standards to support a State's decision not to list particular waters.

Section C of the 2008 Integrated Report states that in State Fiscal Year 2007, more than $280.2 million was awarded to the State from the Water Pollution Control Loan Fund (WPCLF). The fund exceeded the $3.8 billion for total loans since October, 1989. This fund financed implementation of 71 municipal wastewater treatment projects totaling $258 million. Nonpoint source pollution is addressed through the Water Resource Restoration Sponsor Program (WRRSP) of the WPCLF. The WRRSP financed 9 projects for over $13.4 million to protect and restore stream and wetland aquatic habitats. The WPCLF linked deposit program provided interest rate reductions for 192 loans totaling $8.3 million for agricultural and logging BMPs and individual septic systems.

Monitoring should be scheduled for these waters to verify that the water quality standard is attained as expected in a reasonable time frame. Where standards will not be attained through implementation of the requirements listed in 40 C.F.R. 130.7(b)(1) in a reasonable time, it is appropriate for the water to remain on the Section 303(d) list to ensure that implementation of the required controls and progress towards compliance with applicable standards is tracked. If it is determined that the water is, in fact, meeting applicable standards when the next Section 303(d) list is developed, it would be appropriate for the State to remove the water from the list at that time.

Public Participation and Comments on Listing Decisions

The State's public participation process for the 2008 Integrated Report has been extensive. In August, 2007, a mailing was sent to all Level 3 qualified data collectors, including major NPDES discharge permit holders, those who had formerly submitted data, and Level 3 for chemical, biological and/or physical data. (Section D5.1 in the 2008 IR). On January 23, 2008, the State continued its public participation by posting an announcement of its draft of the 2008 Integrated Report available to the public prominently on its website (Section D5.3 of the 2008 IR). The formal comment period for the 2008 Integrated Report was from January 23, 2008 to February 25, 2008. The Notice is included in the 2008 Integrated Report at Section D5.3. Public comments received and Ohio EPA's responses are included in Section D.6; responses to U.S. EPA comments are incorporated into the document

During the public comment period the State received comments, including comments that expressed concern that all data were not assessed and that certain waterbodies should be included or removed from the 303(d) list. The State responded to all of the public comments and addressed its decisions to not consider certain data, or list certain waterbodies on its 2008 Section 303(d) list. Some of the comments resulted in changes to the text in the final 2008 Integrated Report. The State has adequately addressed comments received and has demonstrated, to U.S. EPA's satisfaction, good cause for its listing decisions in the 2008 Section 303(d) list.

Priority Ranking and Targeting

U.S. EPA also reviewed the State's priority ranking of listed waters for TMDL development, and concludes that the State properly took into account the severity of pollution and the uses to be

made of such waters, as well as other relevant factors such as status of recreation use, and the status of aquatic life. For near shore watershed areas of Lake Erie the waterbodies were assigned the same priority as the surrounding contiguous watersheds. Ohio defers to the U.S. EPA for prioritization of open waters of Lake Erie and to ORSANCO for the Ohio River. These waterbodies have low priority ranking for Ohio EPA initiated action, not indicating a low priority related to other relevant factors.

For the remaining waters on Category 5 of the Integrated Report the State used a point system to determine the priority ranking of the AUs. Ohio EPA developed a point system totaling a maximum of 20 possible points (1 being the lowest priority and 20 being the highest priority, including categories of assigned points and extra points). The points were distributed as follows, and can be found in Section J.2, Table J-4 of the 2008 Integrated Report.

- Public Drinking Water Supply Use Impairment (maximum 7 points)
  - 5 points if listed as impaired for 1 indicator
  - 2 points added if listed for 2nd indicator
  - 1 point if on watch list, 1 point per indicator
- Recreation Use Impairment (maximum 6 points)
  - 3 points if listed as impaired
  - 1 point if geometric mean of available fecal coliform data > 1000
  - 1 point if 75th percentile of available fecal coliform data > 3000
  - 1 point if total number of sites was greater than 15 and the geomean was >1000 or impaired for bathing water recreation use in Lake Erie
- Human Health Use Impairment (maximum 3 points)
  - 2 points if listed for Fish Contaminants
  - 1 point added if given severe advisory (do not eat 1 meal per 2 months)
- Aquatic Life Use Impairment (maximum 4 points)
  - 1 point to any AU that had a 0 to 39 score for Aquatic Life Use
  - 2 points to any AU that had a 80 to 90 score for Aquatic Life Use
  - 3 points to any AU that had a 40 to 79 score for Aquatic Life Use
  - 1 point to any AU where ratio of the Aquatic Life Use "non-attainment" to "partial attainment" is greater than 2, indicating better chance for recovery.

In addition, U.S. EPA reviewed the State's identification of WQLSs targeted for TMDL development in the next two years, and concludes that the targeted waters are appropriate for TMDL development in this time frame. Ohio considered various factors in developing both the long term and short term schedule.

Ohio builds on programmatic strengths in monitoring, modeling, permitting, and nonpoint source incentives to develop an integrated approach to TMDLs that aligns program goals and resources efficiently. Ohio also has an active stakeholder process for developing TMDLs. Ohio works on collecting data through the five-year rotating basin plans. Ohio's ALU data are valid for up to ten years for evaluating assessment units, so each AU must be monitored at least once every ten years. Each AU is assigned to one of the next two monitoring cycles using the following criteria: Ohio EPA's five-year Basin Monitoring Strategy; time since most recent assessment; distribution

of work effort among Ohio EPA district offices; priority ranking; and TMDL schedule. Ohio has generated its long-term TMDL schedule based on the following criteria: local interest; funding; and partnership potential. Some flexibility remains in long-term scheduling because it is difficult to predict these variables.

Table J-8 in Section J of the 2008 Integrated Report is the short-term schedule for TMDL Development and is hereby incorporated by reference. It includes five AUs with TMDLs pending, 33 AUs for TMDL completion in 2008, 41 AUs for 2009, and 26 AUs for 2010.

Long term schedule

U.S. EPA has received Ohio's long-term schedule for TMDL development for all waters on the State's 2008 Integrated Report for Category 5 waters (Section L). As a policy matter, U.S. EPA has requested that states provide such schedules.[2] U.S. EPA is not taking any action to approve or disapprove this schedule pursuant to Section 303(d).

[2] See Memorandum from Robert Perciasepe, Assistant Administrator for Water, to Regional Administrators and Regional Water Division Directors, "New Policies for Developing and Implementing TMDLs", August 8, 1997.

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